

What is claimed is:

1. A method of manufacturing a heat spreader module having a heat spreader member, an insulating board, and a metal plate which are joined to a pedestal, comprising the steps of:

supplying active hard brazing materials each containing an active element, between said pedestal, said heat spreader member, said insulating board, and said metal plate; and

pressing and heating said pedestal, said heat spreader member, said insulating board, and said metal plate to melt said active hard brazing materials, thereby joining said pedestal, said heat spreader member, said insulating board, and said metal plate together;

said active hard brazing materials being supplied such that said active hard brazing materials have a thickness ranging from 3 to 20  $\mu\text{m}$  when said active hard brazing materials are melted, said active element being contained in an amount ranging from 400 to 1000  $\mu\text{g}/\text{cm}^2$ .

2. A method according to claim 1, wherein each of said active hard brazing materials comprises a mixture of said active element and a hard brazing material.

3. A method according to claim 1, wherein said active element comprises Ti.

4. A method according to claim 3, wherein each of said active hard brazing materials comprises a hard brazing material containing 3 to 15 weight % of Ti as the active element or a hard brazing material mixed with 3 to 15 weight % of Ti as the active element.

5. A method according to claim 3, wherein each of said active hard brazing materials comprises an active hard brazing material of Ag - Cu - In - Ti or a mixture of a hard brazing material of Ag - Cu - In and an active element Ti.

6. A method according to claim 1, wherein said heat spreader member is made of a composite material comprising a matrix of Carbon and/or Graphite impregnated with Cu or Cu alloy, or a composite material comprising a matrix of SiC impregnated with Cu or Cu alloy.

7. A method according to claim 6, wherein said hard brazing materials are supplied between said pedestal, said heat spreader member, and said metal plate such that said active hard brazing materials have a thickness ranging from 3 to 20  $\mu\text{m}$  when said active hard brazing materials are melted, and contain said active element in an amount ranging from 400 to 1000  $\mu\text{g}/\text{cm}^2$ , and wherein said active hard brazing material is supplied between said insulating board and said metal plate such that said active hard brazing material has a thickness ranging from 3 to 20  $\mu\text{m}$  when said

active hard brazing material is melted, and contains said active element in an amount ranging from 50 to 1000  $\mu\text{g}/\text{cm}^2$ .

5 8. A heat spreader module constructed by supplying active hard brazing materials each containing an active element, between a pedestal, a heat spreader member, an insulating board, and a metal plate, and pressing and heating said pedestal, said heat spreader member, said insulating board, and said metal plate to melt said active  
10 hard brazing materials, thereby joining said pedestal, said heat spreader member, said insulating board, and said metal plate together, said active hard brazing materials being supplied such that said active hard brazing materials have a thickness ranging from 3 to 20  $\mu\text{m}$  when said active hard  
15 brazing materials are melted, said active element being contained in an amount ranging from 400 to 1000  $\mu\text{g}/\text{cm}^2$ .

20 9. A heat spreader module according to claim 8, wherein said metal plate has an alloyed region including constituent elements of said active hard brazing materials.

25 10. A heat spreader module constructed by supplying active hard brazing materials each containing an active element, between a pedestal, a heat spreader member, an insulating board, and a metal plate, and pressing and heating said pedestal, said heat spreader member, said insulating board, and said metal plate to melt said active

hard brazing materials, thereby joining said pedestal, said heat spreader member, said insulating board, and said metal plate together, said metal plate including a marginal edge of alloy having a width within a range of 200  $\mu\text{m}$ .

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11. A heat spreader module according to claim 10, wherein said metal plate has an alloyed region including constituent elements of said active hard brazing materials.